IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Daniel T. Colbert et al.	§	Serial No: unassigned (division of application Serial No. 10/000,746)
For: MACROSCOPICALLY MANIPULABLE NANOSCALE DEVICES MADE FROM NANOTUBE ASSEMBLIES	§	Filed: concurrently herewith
	§	Group Art Unit: 2881 (anticipated)
Atty Dkt: 11321-P011C1D4	§	Prior Examiner: Jack I. Berman 703.308.4849

"EXPRESS MAIL" MAILING LABEL

Number EL 765759960 US

Pursuant to 37 C F R § 1 10, I hereby certify that I am personally depositing this paper or fee with the United States Postal Service "Express Mail Post Office to Addressee" service on the date indicated above in a sealed envelope (a) having the above-numbered Express Mail label and sufficient postage affixed, and (b) addressed to the U.S. Patent and Trademark Office, Box. Patent Application, Washington, D.C. 20231

12/26/01 (Date) Wanda AlexanderWarren (Signature)

Wanda AlexanderWarren (Printed Name)

U.S. Patent and Trademark Office
BOX: PATENT APPLICATION
Washington, D.C. 20231

PRELIMINARY AMENDMENT ACCOMPANYING REQUEST FOR FILING DIVISIONAL APPLICATION UNDER 37 C.F.R. § 1.53(b)

Sir:

This paper accompanies a Request for Filing Divisional Application Under 37 C.F.R. § 1.53(b) and associated filing fee therefor ("the Request"). If the fee payment is missing or insufficient in amount, or if any other fees are determined to be due, the Assistant Commissioner, Commissioner, and/or the Director of the U.S. Patent & Trademark Office is/are hereby authorized to charge any such fees (or credit any overpayment) to Winstead Sechrest & Minick Deposit Account No. 23-2426, referencing matter number 11321-P011C1D4.

AMENDMENTS

In the Title

Please amend the title by replacing the present title with the following:

--METHOD FOR PRODUCING A CATALYST SUPPORT AND COMPOSITIONS THEREOF--

In the Abstract

Please amend the abstract by replacing the present abstract with the following:

-- This invention relates generally to a method for producing single-wall carbon nanotube (SWNT) catalyst supports and compositions thereof. In one embodiment, SWNTs or SWNT structures can be employed as the support material. A transition metal catalyst is added to the SWNT. In a preferred embodiment, the catalyst metal cluster is deposited on the open nanotube end by a docking process that insures optimum location for the subsequent growth reaction. The metal atoms may be subjected to reductive conditions.--

In the Specification

Please amend the specification as noted on page 4, paragraph 11 of the Request by inserting before the first line of the specification the following:

--RELATED APPLICATIONS

This application is a division of co-pending prior application Serial No. 10/000,746, filed on November 30, 2001, which is a continuation of prior application Serial No. 09/242,040 filed on September 13, 1999, which is the 35 U.S.C. § 371 national application of International Application Number PCT/US97/13896 filed on August 8, 1997, which designated the United

States, claiming priority to provisional U.S. patent application Serial Number 60/023,732 filed on August 8, 1996. Each of the foregoing applications is commonly assigned to the assignee of the present invention and is hereby incorporated herein by reference in its entirety.

This application discloses subject matter related to the subject matter of U.S. patent application Serial Number 09/380,545, filed on September 3, 1999 in the name of Richard E. Smalley et al., entitled "Carbon Fibers Formed From Single-Wall Carbon Nanotubes," which application is commonly assigned to the assignee of the present invention and hereby incorporated herein by reference in its entirety.--

In the Claims

Please amend the claims as follows.

Please cancel claims 1-83 without prejudice or disclaimer to the subject matter thereof.

Please add the following new claims 84-115:

84. (new) A method for producing a catalyst support comprising:

a) providing a plurality of single-wall carbon nanotubes;

b) contacting at least some of the single-wall carbon nanotubes of the plurality with at least one catalytic metal; and

c) activating the catalytic metal.

85. (new) The method of claim 84 further comprising removing a fullerene cap from an end of at least some of the single-wall carbon nanotubes.

86. (new) The method of claim 85 wherein the fullerene caps are removed by an oxidative treatment.

87. (new) The method of claim 86 wherein the oxidative treatment comprises a technique selected from the group consisting of oxidative etching, electrochemical oxidative etching and combinations thereof.

88. (new) The method of claim 86 wherein the oxidative treatment comprises the use of a chemical selected from the group consisting of nitric acid, oxygen, carbon dioxide and combinations thereof.

89. (new) The method of claim 86 wherein the oxidative treatment is conducted at a temperature at at most about 500°C.

90. (new) The method of claim 84 further comprising cutting the single-wall carbon nanotubes.

91. (new) The method of claim 84 wherein the catalytic metal comprises a metal selected from the group consisting of transition metals, Group VIII metals, metals of the lanthanide series, metals of the actinide series and mixtures thereof.

92. (new) The method of claim 84 wherein the catalytic metal comprises a metal selected from the group consisting of iron (Fe), cobalt (Co), nickel (Ni), ruthenium (Ru), rhodium (Rh), palladium (Pd), osmium (Os), iridium (Ir), platinum (Pt) and mixtures thereof.

93. (new) The method of claim 84 wherein the catalytic metal is deposited on the single-wall carbon nanotubes.

94. (new) The method of claim 93 wherein the catalytic metal is deposited by a deposition method selected from the group consisting of deposition of a metal vapor in a vacuum, deposition of pre-formed catalyst particles, deposition of a catalyst precursor and combinations thereof.

95. (new) The method of claim 94 wherein the deposition of the metal vapor is done by heating at least one wire comprising the catalytic metal.

96. (new) The method of claim 94 wherein the catalyst precursor is a substance selected from the group consisting of an oxide, salt, metal complex and combinations thereof.

97. (new) The method of claim 84 wherein the activating of the catalytic metal is by heating.

98. (new) The method of claim 84 wherein the activating of the catalytic metal is done by heating under reductive conditions.

99. (new) The method of claim 84 wherein the activating of the catalytic metal produces metal atom clusters comprising from about 10 to about 200 metal atoms.

100. (new) The method of claim 99 wherein the metal atom clusters are located at ends of the single-wall nanotubes.

101. (new) The method of claim 97 wherein the heating is provided by a laser.

102. (new) The method of claim 97 wherein the heating is localized at ends of the single-wall carbon nanotubes of the plurality.

103. (new) The method of claim 97 wherein the heating is at a temperature in a range between about 500°C and about 1300°C.

104. (new) The method of claim 97 wherein the heating is at a temperature in a range between about 500°C and about 1200°C.

105. (new) The method of claim 97 wherein the heating is at a temperature in a range between about 700°C and about 1200°C.

106. (new) The method of claim 97 wherein the heating is at a temperature in a range between about 900°C and about 1100°C.

107. (new) The method of claim 84 wherein the plurality of single-wall carbon nanotubes is a cross section of a previously-grown fiber.

108. (new) The method of claim 84 wherein the single-wall carbon nanotubes are a cut section of a previously-grown fiber.

109. (new) The method of claim 84 further comprising performing a chemical reaction using the single-wall carbon nanotubes and the activated catalytic metal.

110. (new) The method of claim 109 wherein the chemical reaction is performed in an electric field.

111. (new) A composition comprising a catalytic metal supported on at least one single-wall carbon nanotube.

112. (new) The composition of claim 111 wherein the catalytic metal is activated.

113. (new) The composition of claim 111 wherein the catalytic metal comprises a metal selected from the group consisting of transition metals, Group VIII metals, metals of the lanthanide series, metals of the actinide series and mixtures thereof.

114. (new) The composition of claim 111 wherein the catalytic metal comprises a metal selected from the group consisting of iron (Fe), cobalt (Co), nickel (Ni), ruthenium (Ru), rhodium (Rh), palladium (Pd), osmium (Os), iridium (Ir), platinum (Pt) and mixtures thereof.

115. (new) The composition of claim 111 wherein the catalytic metal is located at at least one end of the single-wall carbon nanotubes.

* * * * *

REMARKS

1. *Status of the Application.* Claims 1-83 are cancelled herein without prejudice or disclaimer to the subject matter thereof. Claims 84-115 are added herein. No new matter is added by the addition of these claims.

* * * * *

It is believed that each of the claims now pending in the present application recites elements neither taught nor suggested by the prior art. Further, it is believed that the application as a whole is in proper form and condition for allowance. If the Examiner believes that the application may be placed in even better condition for allowance, he or she is invited to contact the undersigned at the telephone number noted below. Alternatively, or in addition, if the Examiner believes that an Examiner interview would be beneficial, the Examiner is invited to note that the undersigned has ready access to the videoconferencing facilities of the South Central Intellectual Property Partnership at Rice University in Houston, Texas. The inventors and the undersigned would welcome the opportunity to use those facilities to clarify any issues deemed to remain unresolved.

Respectfully submitted,

Date: 21-DEC-2001

Hugh R. Kress
Reg. No. 36,574
Winstead Sechrest & Minick P.C.
2400 Bank One Center
910 Travis Street
Houston, Texas 77002
(713) 650-2714 (voice)
(713) 650-2400 (fax)
ATTORNEYS FOR ASSIGNEE